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Research Article

Validity and Reliability of Korean Version of Health Empowerment Scale (K-HES) for Older Adults

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SUMMARY

Purpose: The purpose of this study was to assess the validity and reliability of the Korean version of the Health Empowerment Scale (K-HES).
Methods: This was a methodological study, which included translation, pilot study, main study and expert verification. The K-HES was translated and modified based on the Diabetes Empowerment Scale–Short Form. Where diabetes was mentioned in the original tool, the K-HES expanded the items to cover all kinds of health conditions that affected health empowerment. Expert-verification, pilot-test and main study were conducted among 175 Korean elderly.
Results: The K-HES had an acceptable internal consistency with a Cronbach's alpha of .80. Construct validity was tested using item analysis and convergent validity. Item analysis demonstrated that all of the corrected item to total correlation coefficients possessed good internal consistency (alpha > .60) except for item 1 (.32) and item 6 (.19). Convergent validity was supported by significant correlations between the total scores of the K-HES and the Exercise Self-Efficacy Scale (Pearson's coefficient = .60). Content validity was supported by scale content validity index of .96 and item content validity index ranging from .96 to 1.0.
Conclusion: The K-HES had acceptable validity and reliability. The brevity and ease of administration of the K-HES makes it a suitable tool for evaluating empowerment-based education programs targeted towards older populations.

Introduction

The health literature on empowerment has increased exponentially since the early 1990s, particularly in relation to chronic conditions (Herbert, Gagnon, Rennick, & O'Loughlin, 2009). Empowerment is an effective philosophy leading to effective interventions for addressing the psychosocial components of living with chronic diseases (Funnell et al., 1991). By emphasizing patient autonomy, the empowerment approach encourages the patient's active participation in treatment-related decision making (Funnell et al.), enhances self-care behaviors and improves health conditions. Hence, there is growing interest in adopting and empowerment approach on interventions and developing instruments to assess the impact of the intervention on a patient's empowerment (Herbert et al.).

Despite the substantial progress made in the development of empowerment scales, there is no suitable instrument to measure health empowerment and the outcomes of empowerment-based interventions in elderly populations. Most empowerment instruments are designed to assess the social and political aspects of empowerment (Choi, 1999; Jung 1998) or to apply to specific groups such as adolescents or psychiatric patients (Lim 1999; Yu & Moon, 2007). Being empowered in relation to health has been important to the older populations in many Asian countries such as Korea. This is due to the high prevalence of chronic illness and sudden changes in expectation of getting filial piety from their adult child (Sung, 2001). In many Asian countries, strong cultural tradition upheld care of older people as an integral part of family responsibility, while kinship ties are valued and emphasized (Ahn & Kim, 2007). However, due to rapid industrialization and urbanization in Asian countries including Korea, the ideological family support for aging parents was endangered (Sung). As a result of this shift, Korean elderly felt pressured to take care of their chronic illness and health by themselves (Yang & Yang, 2010). As such, a new instrument should be developed in order to assess health-related empowerment in the social context of Korea (Park & Han, 2003).

In the health literature, empowerment is described as a contextual, participatory process that enables individuals to achieve a sense of control over their lives. Many investigators have defined

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empowerment as a process of recognizing a sense of control (Bandura, 1977; Fisher, 1994; Gibson, 1991; Menon, 2002; Rappaport, 1981) and problem solving (Anderson et al., 1995; Gibson). In addition, researchers reported that empowerment has core attributes such as the abilities to make decisions (Fawcett et al., 1994; Feste & Anderson, 1995; Fisher; Gibson), self-motivate (Rodgers, 1989; Williams, Freedman, & Deci, 1998), manage psychosocial distress (Anderson et al., 1995), and utilize personal and health care resources (Falk-Rafael, 2001; Kieffer, 1984; Shearer, 2009). In addition, self-efficacy has been viewed as a key concept of empowerment; self-efficacy is one component of empowerment (Gibson; Zimmerman, 1995) as well as an outcome of empowerment (Dunst, Trivette, & Lapointe, 1994). Thus, control, problem solving, decision making, self-motivation, psychosocial coping, resource-utilization and self-efficacy could be key attributes of empowerment.

Among established empowerment measurements, the Diabetes Empowerment Scale (DES; Anderson et al., 1995) reflects the core attributes of empowerment related to diabetes care. Diabetes empowerment addresses the "emotional, spiritual, social, and cognitive aspects of living with a chronic disease" (Arnold, Butler, Anderson, Funnell, & Feste, 1995). It measures one's efficacy to control diabetes in terms of these psychosocial areas (Anderson, Funnell, Fitzgerald, & Marrero, 2000). The initial version of DES consisted of 37 questions (Cronbach's alpha = .94) with eight subscales: (1) knowing satisfaction and dissatisfaction areas related to diabetes, (2) identification and achievement of meaningful goals, (3) application of a systematic problem-solving process, (4) coping with the emotional aspects of living with diabetes, (5) stress management, (6) appropriate social support, (7) self-motivation, and (8) making decisions about behaviors changes (Anderson et al., 2000). The first three DES subscales reflect one of the health empowerment attributes—problem solving—which refers to the ability to identify, analyze and solve one's problems (Gibson, 1991). The fourth and fifth subscales address managing the psychosocial aspects of diabetes (Anderson et al., 2000), reflecting one of the health empowerment attributes: psychosocial coping. The sixth subscale covers obtaining support and the seventh subscale refers to motivation (Anderson et al., 2000), which are the core attributes in health empowerment (Falk-Rafael, 2001; Rodgers, 1989; Shearer, 2009; Williams et al., 1998). The last subscale reflects health empowerment in terms of decision making (Anderson et al., 2000). All eight subscales assess one's perceived ability to control and manage diabetes (Anderson et al., 2000), which reflects self-control and self-efficacy, the major attributes of health empowerment (Bandura, 1977; Fisher, 1994; Gibson; Menon, 2002; Zimmerman, 1995). All this suggests that the eight subscales correspond to seven empowerment attributes: self-control, self-efficacy, problem solving, psychosocial coping, support, motivation, and decision making.

In order to briefly assess diabetes-related empowerment, Anderson, Fitzgerald, Gruppen, Funnell, and Oh (2003) developed an eight-question short form of the DES (the DES-SF). They chose the questions from the original 37 that have the highest question-to-subscale correlation from each of the original eight conceptual domains. The DES-SF demonstrated excellent internal consistency (Cronbach's alpha = .85) and validity for comparing health-related empowerment over time as the subjects change their health behaviors (Anderson et al., 2009). Thus, the DES has been widely used with patients who have chronic conditions (e.g., end stage renal disease; Tsay & Hung, 2004) and translated into other languages such as Chinese (Shiu, Wong, & Thompson, 2003) and Swedish (Leksell et al., 2007).

In this study, the original DES-SF was used to develop the K-HES. This was for two reasons: First, the eight items of the DES-SF reflect every aspect of the core attributes of health-related empowerment mentioned above. Second, since diabetes is one of the major chronic illnesses in elderly Koreans, the DES-SF can be expanded and applied to measure their associated level of health empowerment. According to the Korean national health and nutrition examination survey report 2005 (Korean Ministry of Health and Welfare, 2006), 90% of Korean older adults have one or more chronic illness, yet the majority of them have not made any effort to change their lifestyle or engage in self-care. It is therefore reasonable to assume that the overall health of the older population could be determined by how well they control their chronic illness and engage in self-care. Thus, DES-SF which was developed to measure the extent of power of controlling diabetes could be modified to measure the power of controlling chronic illness and overall health problems in the elderly. Further, evidence suggests that the DES-SF applies to the elderly. The mean age of participants in the following intervention studies that used the DES-SF were 61.0 years ($SD = 10.4$), 63.0 years ($SD = 7.2$), 63.1 years ($SD = 10.3$), and 62.4 years ($SD = 10.2$) (Tang, Funnell, Brown, & Kurlander, 2010; Tang, Funnell, Gillard, Nwankwo, & Heisler, 2011; Tang, Funnell, Noorulla, Oh, & Brown, 2012; Tang, Funnell, & Oh, 2012). The fact that the majority of the DES-SF recipients were over 60 years old demonstrates the feasibility of applying the DES-SF to older populations. In addition, DES-SF, which is composed of only eight questions, would likely improve response rate and obtain more accurate answers by reducing tediousness and fatigue from numerous questions. For these reasons, the DES-SF would be suitable for measuring the empowerment of the elderly. Therefore, the purpose of the study was twofold: (a) to translate and modify the DES-SF to measure the health-related empowerment of Korean elderly and (b) to perform validation of K-HES. The specific aims of validation of the K-HES were as follows: (a) to test internal consistency by calculating Cronbach's alpha, (b) to evaluate construct validity using each item's corrected item to total correlation coefficient and testing convergent validity by comparing the K-HES with the Korean version of Exercise Self-Efficacy Scale (ESES), (c) to test content validity by seeking feedback from experts.

Methods

Study design

A four-phased methodological study, which included translation, pilot study, main study and expert verification was undertaken from April 2011 to September 2011 in South Korea.

Setting and samples

There were 20 participants in the pilot study and 175 older people in the main study. These participants were registered in two senior centers in South Korea. The inclusion criteria were as follows: over 60 years old; having one or more chronic illnesses; ability to speak and understand Korean and willingness to participate in this study.

The required sample size was calculated using the G-power program. Based on this calculation to achieve power of 0.80, an effect size of 0.30 and a significance level of .05 at regression analysis or correlation analysis (Faul, Erdfelder, Lang, & Buchner, 2007), 82 participants were needed for the study. Considering the probability of incomplete responses, 200 participants were recruited. A total of 175 questionnaires were completed and submitted for analysis.

Ethical considerations

The study was carried out after receiving approval from the institutional review board at Seoul National University. Written informed consents were obtained when the participants agreed to participate in the study.

Measurements

Health empowerment

Health empowerment is defined as "a cognitive state characterized by perceptions of control regarding one's own health and health care; perceptions of competence regarding one's ability to maintain good health and manage interactions with the health care system; and internalization of health ideas and goals at the individual and societal level" (Menon, 2002). The K-HES was used to assess health empowerment of Korean older adults. K-HES was developed by translating and modifying the DES-SF (Anderson et al., 2003). It consisted of eight Likert-scale questions (5 = *strongly agree*; 4 = *agree*; 3 = *neither agree nor disagree*; 2 = *disagree*; 1 = *strongly disagree*). The mean question score was calculated by summing the scores of each individual question and dividing them by the number of questions. Higher scores for the empowering subscale indicated that participants perceived a higher level of health-related empowerment. The contents of the K-HES were presented in Table 1.

Exercise self-efficacy

Self-efficacy is a belief about the capabilities of performing certain types of behaviors given specific situations and it is considered one of the core attributes of empowerment (Bandura, 1977). In particular, exercise self-efficacy is one's perceived ability to engage in exercise regularly (Bandura, 1997). According to Bandura (1997), exercise is an important means by which the elderly can improve health and age successfully. Thus, it is reasonable to assume that a high level of exercise self-efficacy among the elderly can contribute to health maintenance and prevention of degeneration. Exercise self-efficacy was used to evaluate the convergent validity of the K-HES among the elderly whose primary health maintenance strategy is exercise.

Exercise self-efficacy was assessed using the ESES which was developed by Bandura (1997) and translated into Korean by Shin, Jang, and Pender (2001). The Korean ESES consists of eight items with a higher number score reflecting higher exercise self-efficacy. Cronbach's alpha was .94 in the study of Shin et al. and .93 in this study.

Procedure

Translation and modification

Written permission was obtained from Anderson to adapt the DES-SF into Korean and to use the instrument in this study. To assess the validity and reliability of the K-HES, the DES-SF was translated into Korean by a doctoral student specializing in gerontological nursing. Because the DES-SF items ask respondents to describe their perceived power or control over managing their diabetes-caused health problems and practicing self-care, the term "diabetes" replaced "health problems," and "diabetes care" replaced "health care". An English native speaker from the United States who has no knowledge of the DES-SF translated the K-HES back into English. After that, translation was reviewed by two gerontological nursing professors and one gerontologist. They were asked to make comments on individual questions in relation to the accuracy, clarity, and cultural relevance of the translation. Eight questions were evaluated as being difficult to understand directly (regarding fluency) and one question (question 6) was noted to mix the terms "health care" and "health". All questions were edited in light of the comments. The final version of the K-HES was reviewed and approved by Anderson who developed the DES-SF. Anderson confirmed there are no problematic questions that would distort the meaning of health empowerment.

Pilot test

A pilot test ($n = 20$) was performed with K-HES for evaluating feasibility, time, cost, and adverse events (Hulley, Cummings, Browner, Grady, & Newman, 2006) in August 2011. The first author read the scale in Korean in a consistent manner and recorded the responses. The mean age of participants was 74 years ($SD = 1.03$) and 60% of participants were women. The vast majority (95%) of participants had one or more chronic illness. No problems were reported in terms of feasibility and adverse events. As a result, the K-HES has acceptable legibility in the older people and it required an average of 10 minutes to complete. The Cronbach's alpha of K-HES was .75 in the pilot study.

Main study

The main study was conducted with 175 senior citizens in September 2011. The study was approved by the institutional review board of the university. All participants completed a written informed consent form prior to the interviews. Data collection involved face-to-face interviews with the trained research assistants in a similar and constant manner.

Expert verification

The process of expert verification was repeatedly conducted to reinforce the validity of the K-HES. It was done after the main study

Table 1 *Content of Korean Version of Health Empowerment Scale (K-HES)*

	Subscales of DES	Original version (DES-SF)	K-HES[a]
		In general, I believe that	In general, I believe that
1	Satisfaction & dissatisfaction related to diabetes.	I know what part(s) of taking care of my diabetes that I am dissatisfied with.	I know what part(s) of taking care of my health that I am dissatisfied with.
2	Identification & achievement of meaningful goals	I am able to turn my diabetes goals into a workable plan.	I can set up a plan to achieve health care goals.
3	Application of a systematic problem-solving process	I can try out different ways of overcoming barriers to my diabetes goals.	I can try out various ways to overcome hurdles to my health care goals.
4	Coping with the emotional aspects of living with diabetes	I can find ways to feel better about having diabetes.	I have some health problems but can find ways to be positive.
5	Stress management	I know the positive ways I cope with diabetes-related stress.	I know a positive method to cope with stress related to my health care.
6	Appropriate social support	I can ask for support for having and caring for my diabetes when I need it.	I can ask for support for taking care of my health when I need it.
7	Self-motivation	I know what helps me stay motivated to care for my diabetes.	I know what helps me stay motivated to take care of my health.
8	Making cost/benefit decisions about making behavior changes	I know enough about myself as a person to make diabetes care choices that are right for me.	As I am well aware of myself, I can select a health care method suitable for me.

Note. DES = Diabetes Empowerment Scale; DES-SF = Diabetes Empowerment Scale-Short Form.

[a] These questions have been translated back into English from the K-HES by an authorized translator.

Table 2 *Demographic Characteristics of Participants (N = 175)*

Characteristics	*n* (%) or M ± SD	Min	Max
Age (yr)	74.66 ± 5.93	64	93
60-69	32 (18.3)		
70-79	108 (61.7)		
80-89	32 (18.3)		
≥90	3 (1.7)		
Gender			
Male	42 (24.1)		
Female	132 (75.9)		
Spouse			
Yes	73 (42.0)		
No	101 (58.0)		
Education			
None	29 (16.6)		
Elementary school	74 (42.3)		
Middle school	25 (14.3)		
High school	31 (17.7)		
College	16 (9.1)		
Household income(thousand won/month)			
<1,000	132 (75.9)		
1,000-1,999	31 (17.8)		
≥2,000	11 (6.27)		
Types of chronic diseases*			
Hypertension	103 (58.9)		
Arthritis	71 (40.6)		
Diabetes mellitus	36 (20.6)		
Hyperlipidemia	30 (17.1)		
Osteoporosis	28 (16.0)		
Cataract	25 (14.3)		
Myocardial infarction	16 (9.1)		
The number of chronic diseases	2.21 ± 1.38	0	8
Exercise self-efficacy scale	75.42 ± 19.61	Cronbach's alpha .90	Item 8

Note. * Types of chronic diseases were assessed by using the chronic illness questionnaire (Kim, 2010).

was completed. The final expert verification was performed by two gerontologists, and three nursing professors including one expert who specialized in developing health instruments. They were asked to rate each question as a valid measure of the construct using a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). Based on their responses, the content validity index was calculated.

Data analysis

Analysis was conducted using descriptive statistics and appropriate reliability and validity statistical tests using SPSS 18.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used to establish the frequency, range, mean, and standard deviation of demographic and clinical characteristics of the main sample. For reliability assessment, internal consistency analysis (Cronbach's alpha) was conducted. For validity assessment, content validity and construct validity were evaluated. In order to assess construct validity, item analysis and convergent validity were tested. Construct validity can be approached in several ways such as convergent validity, discrimination validity, item analysis and factor analysis (Won et al., 2002). Even though confirmatory factor analysis is preferable as an approach to construct validity (Polit & Beck, 2007), item analysis was chosen because the DES-SF consisted of the highest correlated eight items from each of the eight factors in the DES-37 (Anderson, 2003). Item analysis was conducted by calculating the coefficient of corrected item-total correlation. To assess the convergent validity of the K-HES with the ESES, Pearson's correlation coefficient was computed. To assess content validity, Item Content Validity Index (I-CVI), and Scale Content Validity Index (S-CVIs) were calculated.

Results

Demographics and clinical characteristics of participants in main study

A summary of the baseline characteristics of main study participants ($N = 175$) is presented in Table 2. The mean age of participants was 74.66 years and ranged from 64 to 93 years. Most participants were women (75.9%) and most (89.7%) had one or more chronic diseases. Two thirds had hypertension, half had arthritis and one third had diabetes. They had an average of 2.21 chronic diseases.

Descriptive statistics for K-HES

Each individual response's mean, standard deviation, skewness and kurtosis were calculated to verify the distribution of each question (Table 3). The mean K-HES score for the sample was 3.51 ($SD = 0.73$). Every question was in the range 3.22–3.79 ($SD = 1.03$–1.30). The coefficient of skewness was from −0.76 to +0.08 and the coefficient of kurtosis was from −1.09 to +0.06, which showed that the responses to each question followed a normal distribution.

Both floor and ceiling effects were relatively small (Table 4). The highest proportion ceiling effect was found in Question 8 (29.1). Considering that the floor effect and ceiling effect are meaningful when the percentage of each is over 20% (McHorney, War, Lu, & Sherbourne, 1993), our results show that the K-HES has significant power to measure the level of health empowerment of older Korean adults. The result of scoring the worst/best analysis was satisfied because the range from 33.7 to 66.3 suggests that the result can be classified as satisfactory.

Reliability

Internal consistency (Cronbach's alpha) was calculated for all the questions taken together. When Cronbach's alpha is over .60, the instrument is considered to have an acceptable internal consistency (Burns & Grove, 2008). The K-HES has excellent internal consistency (Cronbach's alpha = .80).

Validity

Construct validity

Construct validity was tested using convergent validity and item analysis. In item analysis, most of the corrected item-total

Table 3 *Descriptive Statistics for Korean version of Health Empowerment Scale (N = 175)*

	Item content	*M* ± *SD*	Skewness	Kurtosis
1	I know what part(s) of taking care of my health that I am dissatisfied with.	3.22 ± 1.12	0.07	−1.09
2	I can set up a plan to achieve health care goals.	3.33 ± 1.22	−0.21	−0.99
3	I can try out various ways to overcome hurdles to my health care goals.	3.22 ± 1.10	−0.08	−0.90
4	I have some health problems but can find ways to be positive.	3.75 ± 1.03	−0.58	−0.25
5	I know a positive method to cope with stress related to my health care	3.63 ± 1.09	−0.53	−0.56
6	I can ask for support for taking care of my health when I need it.	3.49 ± 1.30	−0.38	−1.16
7	I know what helps me stay motivated to take care of my health.	3.62 ± 1.07	−0.60	−0.25
8	As I am well aware of myself, I can select a health care method suitable for me.	3.79 ± 1.07	−0.76	0.06
	Total	3.51 ± 0.73	−0.33	−0.22

Table 4 *Score Distributions for Korean Version of Health Empowerment Scale Items (N = 175)*

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
Worst result (% scoring 1–3)	56.6	51.4	56.0	36.0	37.7	42.3	38.9	33.7
Best result (% scoring 4–5)	43.4	48.6	44.0	64.0	62.3	57.7	61.1	66.3
Floor effect (% scoring 1)	2.9	6.9	4.6	2.3	2.9	6.9	4.0	4.0
Ceiling effect (% scoring 5)	14.9	20.0	12.6	25.7	22.3	28.0	21.1	29.1

correlation coefficients were over .60 except for Question 1 (.32) and Question 6 (.19) (Table 5). When the Cronbach's alpha was recalculated after deleting item 1 or item 6, there were small improvements in Cronbach's alpha from the overall total of .80. The recalculated Cronbach's alpha without item 1 was .81, and the Cronbach's alpha without item 6 was .84. Convergent validity was demonstrated by significant correlations between the total scores of the K-HES and the ESES. The Pearson's coefficient was .60 ($p < .001$). A correlation coefficient of .50 or over is considered a strong correlation (Cohen, 1988).

Content validity

Content validity was assessed by asking the members to rate each question as a valid measure of the construct using a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). Based on their responses, a content validity index was calculated for each question (I-CVI) and for the scale (S-CVI). The I-CVI was calculated to determine whether each question was sufficiently relevant and clear. The S-CVI was calculated by dividing the number of times a question was rated 3 or 4 by the total number of experts who rated the question. The baseline criterion for instrument validation is an S-CVI score of 0.90 (Polit & Beck, 2007). The overall ratings were high, attaining an S-CVI of 0.96. All of the I-CVIs were 1.0 except Question 1 and 6, which received 0.86.

Discussion

In our study, we focused on both the modification for assessing health-related empowerment and the validation process to ensure that the K-HES has adequate reliability and validity. In general, the K-HES has excellent reliability and validity for assessing the health-related empowerment of elderly individuals. In addition, considering elderly health is closely related with chronic illness and self-care, the K-HES would be beneficial for measuring elderly health empowerment in terms of managing chronic illness because it was based on the DES-SF which thoroughly covered the key attributes of health empowerment in the context of diabetes.

A review of findings demonstrated the mean score of the K-HES was 3.51, which shows that Korean senior citizens have a level of empowerment that is above average. Similar results were found using the Chinese-DES ($M = 3.65$, $SD = 0.40$) and Swedish-DES ($M = 3.68$, $SD = 0.53$). In addition, both the floor and ceiling effects were relatively small (under 20%). The result from the worst/best scoring analysis was satisfactory, which means the K-HES is acceptable for evaluating the extent of health empowerment of the elderly.

The K-HES demonstrated acceptable reliability. The Cronbach's alpha for the K-HES was good (.80). When comparing the DES-SF (Cronbach's alpha = .84), the K-HES has a similar level of internal consistency. When compared with other instruments that have been translated into Korean such as the Korean Mental Rehabilitation Empowerment Scale (Cronbach's alpha = .86; Lim, 1999) or the Korean version of Torre's Empowerment Scale (Cronbach's alpha = .81; Choi, 1999), the K-HES is acceptable.

The overall validity for the K-HES is reported to be fair. Convergent validity and content validity were acceptable. The convergent validity was supported by significant correlations between the total scores on the K-HES and the ESES (Pearson's coefficient = .60). This result shows that there is a strong correlation between empowerment as measured by the K-HES and self-efficacy as measured by the ESES scale, which is supported by previous research using self-efficacy as a component of empowerment and result of empowerment (Gibson, 1991; Scheel & Rieckmann, 1998; Zimmerman, 1995). Tsay and Hung (2004) reported a strong correlation ($r = .38$, $p = .001$) between scores on the DES-28 and scores on the Strategies Used by People to Promote Health Scale, which measures self-efficacy. This corresponds to the results found for the K-HES. In addition, the content validity of the K-HES was acceptable. All of the I-CVIs were 1.0 except questions 1 and 6 which received 0.86. The S-CVI was calculated at 0.96.

However, when looking at the corrected item-total correlation, Question1 had a coefficient of .31 and Question 6 had a coefficient of .19, suggesting that some of the items should be revised. Streiner and Norman (2003) stated that a question with less than a 0.30 correlation coefficient is not considered to contribute to the overall scale. The modification of item 1 and 6 is also supported by small improvements in the Cronbach's alpha if items 1 or 6 were deleted from the overall total of .80. Although there were trivial changes in the Cronbach's alpha if items 1 or 6 were deleted, the two questions reflect properties of health empowerment (Anderson et al., 2000). Cronbach's alpha does not increase by a large degree from deleting item 1 or item 6. After consulting with a statistical expert, we concluded that modifying items 1 and 6 in the context of health empowerment and Korean culture would be more appropriate than replacing these items with others.

In the case of question 1, most subjects scored 1 point or 2 points because they perceived that they were in good health and they did not have any problem or unsatisfactory experience of health. Leksell et al. (2007) reported the same result, because patients who perceive that they are in excellent health might consider that they have no need to change or that they have made all the changes they are able and willing to make. In this sense, it is improper to ask people who are satisfied with their health condition to identify areas of their health care with which they are dissatisfied. In the original version of the DES-SF, Question 1 assesses the areas of

Table 5 *Corrected Item-total Correlation for Korean Version of Health Empowerment Scale (N = 175)*

	Item content	Corrected item-total correlation
1	I know what part(s) of taking care of my health that I am dissatisfied with.	.32
2	I can set up a plan to achieve health care goals.	.61
3	I can try out various ways to overcome hurdles to my health care goals.	.66
4	I have some health problems but can find ways to be positive.	.61
5	I know a positive method to cope with stress related to my health care.	.63
6	I can ask for support for taking care of my health when I need it.	.19
7	I know what helps me stay motivated to take care of my health.	.60
8	As I am well aware of myself, I can select a health care method suitable for me.	.63
	Total	.32

satisfaction as well as dissatisfaction. If Question 1 asked about areas of satisfaction as well as areas of dissatisfaction with respect to their taking care of their health, people who are satisfied with their health condition will be able to answer properly instead of scoring all 1's or 2's. Therefore, Question 1 should be revised to assess areas of both satisfaction and dissatisfaction with taking care of health.

The coefficient of the corrected item-total correlation was low in question 6 (<.30) because the participants regarded supporters to be acquaintances such as family members or friends. Indeed, many participants said that they would not ask their family for help because they did not want to be a burden. Yang and Yang (2010) reported that the Korean elderly have a strong will to be independent from their family because they are afraid to be a burden. In this sense, cultural differences were not reflected in translating question 6, which could not contribute to measuring health-related empowerment at the scale-level. In general, support for the elderly is provided by health care providers or the health care system (Menon, 2002). Menon defined health empowerment as the extent to which an individual feels empowered in areas of interaction with "health service providers" and "health policy and systems" as well as individual autonomy and uniqueness. In this sense, question 6 should be modified to inquire whether participants can find support not only from family and friends but also from available health systems and health service providers.

In summary, the K-HES is a valid measure for exploring the extent of health-empowerment among Asian elderly as well as for evaluating the outcome of empowerment-based interventions. Considering that the K-HES reflects Asian culture, the K-HES can be applied to understand health empowerment among Asian elderly with diverse ethnicity. In addition, the K-HES would be beneficial to assess those who have shorter attention spans and need special assistance to complete the questionnaire because of its brevity and short amount of time required to complete the questionnaire.

This study is subject to several limitations. First, the generalizability of the results is limited by convenience sampling, although an attempt was made to minimize selection bias. Second, the study only used Cronbach's alpha to evaluate the reliability of the K-HES. Measuring test-retest reliability will be required to confirm the stability of the K-HES in future studies. In addition, to confirm content validity, further research is needed for comparing obviously different groups. For example, one group is expected to have low health empowerment such as those in nursing home residence or hospitals; the other group is expected to have high health empowerment such as those in registering senior centers and participating in programs actively.

Conclusion

The K-HES has been modified and tested in older people in South Korea. Its reliability is supported by a strong internal consistency. It demonstrated good convergent and content validity. We conclude that cross-cultural adaptation of the K-HES was successful in Korean elderly population and this instrument may provide a new approach to measuring the health empowerment for older people.

Conflict of Interest

The authors declare no conflict of interest.

References

Ahn, T., & Kim, K. (2007). Mutual caring of elderly Korean couples. *Journal of Transcultural Nursing, 18*(1), 28–34.

Anderson, R. M., Fitzgerald, J. T., Gruppen, L. D., Funnell, M. M., & Oh, M. S. (2003). The diabetes empowerment scale-short form (DES-SF). *Diabetes Care, 26*(5), 1641–1642. http://dx.doi.org/10.2337/diacare.26.5.1641-a

Anderson, R. M., Funnell, M. M., Aikens, J. E., Krein, S. L., Fitzgerald, J. T., Nwankwo, R., et al. (2009). Evaluating the efficacy of an empowerment-based self-management consultant intervention: results of a two-year randomized controlled trial. *Therapeutic Patient Education, 1*(1), 3–11. http://dx.doi.org/10.1051/tpe/2009002

Anderson, R. M., Funnell, M. M., Butler, P. M., Arnold, M. S., Fitzgerald, J. T., & Feste, C. C. (1995). Patient empowerment. Results of a randomized controlled trial. *Diabetes Care, 18*(7), 943–949. http://dx.doi.org/10.2337/diacare.18.7.943

Anderson, R. M., Funnell, M. M., Fitzgerald, J. T., & Marrero, D. G. (2000). The diabetes empowerment scale: a measure of psychosocial self-efficacy. *Diabetes Care, 23*(6), 739–743. http://dx.doi.org/10.2337/diacare.23.6.739

Arnold, M. S., Butler, P. M., Anderson, R. M., Funnell, M. M., & Feste, C. (1995). Guidelines for facilitating a patient empowerment program. *Diabetes Educator, 21*(4), 308–312. http://dx.doi.org/10.1177/014572179502100408

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. http://dx.doi.org/10.1037//0033-295X.84.2.191

Bandura, A. (1997). *Self-efficacy: The exercise of self-control*. New York, NY: W. H. Freeman.

Burns, N., & Grove, S. K. (2008). *The practice of nursing research: Appraisal, synthesis, and generation of evidence* (6th ed.). Philadelphia, PA: Saunders.

Choi, E. (1999). *Effects of empowerment education program for the type 2 diabetics on the empowerment, self-care behavior and the glycemic control*. Unpublished doctoral dissertation, Seoul National University, Seoul, Korea.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Dunst, C. J., Trivette, C. M., & LaPointe, N. (1994). Meaning and key characteristics of empowerment. *Supporting and Strengthening Families, 1*, 12–29.

Falk-Rafael, A. R. (2001). Empowerment as a process of evolving consciousness: a model of empowered caring. *Advances in Nursing Science, 24*(1), 1–16.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191. http://dx.doi.org/10.3758/BF03193146

Fawcett, S. B., White, G. W., Balcazar, F. E., Suarez-Balcazar, Y., Mathews, R. M., Paine-Andrews, A., et al. (1994). A contextual-behavioral model of empowerment: case studies involving people with physical disabilities. *American Journal of Community Psychology, 22*(4), 471–496. http://dx.doi.org/10.1007/BF02506890

Feste, C., & Anderson, R. M. (1995). Empowerment: from philosophy to practice. *Patient Education and Counseling, 26*(1–3), 139–144. http://dx.doi.org/10.1016/0738-3991(95)00730-N

Fisher, D. B. (1994). Health care reform based on an empowerment model of recovery by people with psychiatric disabilities. *Hospital and Community Psychiatry, 45*(9), 913–915.

Funnell, M. M., Anderson, R. M., Arnold, M. S., Barr, P. A., Donnelly, M., Johnson, P. D., et al. (1991). Empowerment: an idea whose time has come in diabetes education. *The Diabetes Educator, 17*(1), 37–41. http://dx.doi.org/10.1177/014572179101700108

Gibson, C. H. (1991). A concept analysis of empowerment. *Journal of Advanced Nursing, 16*(3), 354–361. http://dx.doi.org/10.1111/j.1365-2648.1991.tb01660.x

Herbert, R. J., Gagnon, A. J., Rennick, J. E., & O'Loughlin, J. L. (2009). A systematic review of questionnaires measuring health-related empowerment. *Research and Theory for Nursing Practice, 23*(2), 107–132. http://dx.doi.org/10.1891/1541-6577.23.2.107

Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B. (2006). *Designing clinical research* (3rd ed.). Philadelphia, PA: Lippincott Williams & Wilkins.

Jung, H. J. (1998). *A study on the influence of empowerment on job satisfaction and organizational commitment*. Unpublished doctoral dissertation, Seoul National University, Seoul, Korea.

Kieffer, C. H. (1984). Citizen empowerment: a developmental perspective. *Prevention in Human Services, 3*(2–3), 9–36. http://dx.doi.org/10.1300/J293v03n02_03

Korean Ministry of Health and Welfare. (2006). *National health and nutrition examination survey report 2005. Seoul, Korea*. Retrieved January 1, 2012, from http://stat.mw.go.kr/front/statData/publicationView.jsp?bbsSeq=13&menuId=47&nPage=8&nttSeq=354&searchKey=&searchWord=

Leksell, J., Funnell, M., Sandberg, G., Smide, B., Wiklund, G., & Wikblad, K. (2007). Psychometric properties of the Swedish diabetes empowerment scale. *Scandinavian Journal of Caring Sciences, 21*(2), 247–252. http://dx.doi.org/10.1111/j.1471-6712.2007.00463.x

Lim, J. K. (1999). *A study on the effect of social on mental health disorder's empowerment: Compared with residential type*. Unpublished master's thesis, Ewha Woman University, Seoul, Korea.

McHorney, C. A., War, J. E., Jr., Lu, J. F. R., & Sherbourne, C. D. (1993). The MOS 36-item short-form health survey (SF-36). *Medical Care, 31*(3), 247–263. http://dx.doi.org/10.1097/00005650-199303000-00006

Menon, S. T. (2002). Toward a model of psychological health empowerment: implications for health care in multicultural communities. *Nurse Education Today, 22*(1), 28–39. http://dx.doi.org/10.1054/nedt.2001.0721

Park, J. M., & Han, S. H. (2003). The effect of exercise program on health and depression in the elderly. *Journal of Korean Academy of Nursing, 33*(2), 220–227.

Polit, D. F., & Beck, C. T. (2007). *Nursing research: Generating and assessing evidence for nursing practice* (8th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.

Rappaport, J. (1981). In praise of paradox: a social policy of empowerment over prevention. *American Journal of Community Psychology, 9*(1), 1–25. http://dx.doi.org/10.1007/BF00896357

Rodgers, B. L. (1989). Concepts, analysis and the development of nursing knowledge: the evolutionary cycle. *Journal of Advanced Nursing, 14*(4), 330–335. http://dx.doi.org/10.1111/j.1365-2648.1989.tb03420.x

Scheel, M. J., & Rieckmann, T. (1998). An empirically derived description of self-efficacy and empowerment for parents of children identified as psychologically disordered. *The American Journal of Family Therapy, 26*(1), 15–27. http://dx.doi.org/10.1080/01926189808251083

Shearer, N. B. (2009). Health empowerment theory as a guide for practice. *Geriatric Nursing, 30*(Suppl. 2), 4–10. http://dx.doi.org/10.1016/j.gerinurse.2009.02.003

Shin, Y., Jang, H., & Pender, N. J. (2001). Psychometric evaluation of the exercise self-efficacy scale among Korean adults with chronic diseases. *Research in Nursing and Health, 24*(1), 68–76. http://dx.doi.org/10.1002/1098-240X(200102)24:1%3c68::AID-NUR1008%3e3.3.CO;2-3

Shiu, A. T. Y., Wong, R. Y. M., & Thompson, D. R. (2003). Development of a reliable and valid Chinese version of the diabetes empowerment scale. *Diabetes Care, 26*(10), 2817–2821. http://dx.doi.org/10.2337/diacare.26.10.2817

Streiner, D. L., & Norman, G. R. (2003). *Health measurement scales: A practical guide to their development and use*. Cary, NC: Oxford University Press.

Sung, K. (2001). Family support for the elderly in Korea. *Journal of Aging and Social Policy, 12*(4), 65–79. http://dx.doi.org/10.1300/J031v12n04_04

Tang, T. S., Funnell, M. M., Brown, M. B., & Kurlander, J. E. (2010). Self-management support in "real-world" settings: an empowerment-based intervention. *Patient Education and Counseling, 79*(2), 178–184. http://dx.doi.org/10.1016/j.pec.2009.09.029

Tang, T. S., Funnell, M. M., Gillard, M., Nwankwo, R., & Heisler, M. (2011). Training peers to provide ongoing diabetes self-management support (DSMS): results from a pilot study. *Patient Education and Counseling, 85*(2), 160–168. http://dx.doi.org/10.1016/j.pec.2010.12.013

Tang, T. S., Funnell, M. M., Noorulla, S., Oh, M., & Brown, M. B. (2012). Sustaining short-term improvements over the long-term: results from a 2-year diabetes self-management support (DSMS) intervention. *Diabetes Research and Clinical Practice, 95*(1), 85–92. http://dx.doi.org/10.1016/j.diabres.2011.04.003

Tang, T. S., Funnell, M. M., & Oh, M. (2012). Lasting effects of a 2-year diabetes self-management support intervention: outcomes at 1-year follow-up. *Preventing Chronic Disease, 9*, E109. http://dx.doi.org/10.5888/pcd9.110313

Tsay, S. L., & Hung, L. O. (2004). Empowerment of patients with end-stage renal disease—a randomized controlled trial. *International Journal of Nursing Studies, 41*(1), 59–65. http://dx.doi.org/10.1016/S0020-7489(03)00095-6

Williams, G. C., Freedman, Z. R., & Deci, E. L. (1998). Supporting autonomy to motivate patients with diabetes for glucose control. *Diabetes Care, 21*(10), 1644–1651. http://dx.doi.org/10.2337/diacare.21.10.1644

Won, C. W., Yang, K. Y., Rho, Y. G., Kim, S. Y., Lee, E. J., Yoon, J. L., et al. (2002). The development of Korean activities of daily living (K-ADL) and Korean instrumental activities of daily living (K-IADL) scale. *Journal of the Korean Geriatrics Society, 6*(2), 107–120.

Yang, J. H., & Yang, B. S. (2010). Alternative view of health behavior: the experience of older korean women. *Qualitative Health Research, 21*(3), 324–332. http://dx.doi.org/10.1177/1049732310379238

Yu, P. S., & Moon, S. H. (2007). A study on the instrument development of empowerment level's measurement for high school students. *Journal of Educational Research, 5*(2), 25–55.

Zimmerman, M. A. (1995). Psychological empowerment: issues and illustrations. *American Journal of Community Psychology, 23*(5), 581–599. http://dx.doi.org/10.1007/BF02506983